

APPALACHIAN FOREST EXPERIMENT STATION

A method for rating forest fire intensity.

Uniform and accurate procedure in appraising forest fire damage in southern Appalachian hardwoods requires first a method for rating forest fire intensities. Such a method is demonstrated by the following curves derived from data on 11 types and severities of fires in three widely separated localities.

Five classes of fire intensity have been arbitrarily established based on the percentage of 3-inch trees killed. Class 1 fires are those in which from 0 to 20 percent have been killed; Class 2, in which 20 to 40 percent have been killed, and so on to Class 5 which includes those fires where 80 percent or more of the 3-inch trees have been killed. Exceptional fires, those greater in severity than 5, may be designated as Class 6.

In practice, percent mortality of 3-inch trees can be used to determine the fire intensity without reference to the graph. Using the graph, shown below, fire intensity can be determined if the percent mortality of any diameter class is known. For example, if 40 percent of the 5-inch trees were killed the intersection of the 40 percent line and the 5-inch d.b.h. line on the graph falls within the band between curves designating Class 4 fires. Or, if only 10 percent of the 5-inch trees were killed reference to the graph would show it to be a Class 2 fire.

It is emphasized that the curves are based on tallies made during the first growing season following the fire and, therefore, do not indicate the total mortality which may continue for 8 to 10 years following a single fire.

The data given here are probably not applicable to the Northern hardwood types where thin barked species are relatively more abundant.

PERCENTAGE OF OAK AND CHESTNUT TREES KILLED BY SIZE CLASSES IN FIRES OF DIFFERENT SEVERITIES. SEVERITY MEASURED BY THE PERCENTAGE KILLED IN THE THREE-INCH CLASS.

